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TP 1624

Marine Casualty Investigations

Enquêtes sur les accidents maritimes

Investigation Report to the Minister pursuant to sections 542 or 545 of the Canada Shipping Act

Rapport d'investigation au Ministre conformément aux articles 542 ou 545 de la Loi sur la marine marchande du Canada

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INVESTIGATION REPORT INTO THE CIRCUMSTANCES ATTENDING THE FALL OVERBOARD AND THE DROWNING OF A CREW MEMBER FROM THE CANADIAN COAST GUARD VESSEL "NICOLET" IN THE PORT OF QUEBEC, P.Q., ON SEPTEMBER 19, 1986.

REPORT No. 463

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INVESTIGATION REPORT INTO THE CIRCUMSTANCES ATTENDING THE FALL OVERBOARD AND THE DROWNING OF A CREW MEMBER FROM THE CANADIAN COAST GUARD VESSEL "NICOLET" IN THE PORT OF QUEBEC, P.Q., ON SEPTEMBER 19, 1986.

Particulars of Vessel

Name	"NICOLET"
Official Number	320969
Port of Registry	Ottawa
Call Sign	CGDL
Gross Tonnage	887
Net Tonnage	147
Length (registered)	48.46 m
Breadth	10.67 m
Draught (at time of incident)	F: 2.77 m A: 3.50 m
Type	Research Vessel
Built	1966, Collingwood, Ont
Propulsion	Two Fairbanks-Morse, 2SA, 5 cylinder diesel engines of 1,660 b.h.p. (1,221 kW), driving through a single reduction gearing two variable pitch propellers controlled from the bridge
Bow Thruster	None
Cargo	None
Crew	25
Owner	The Minister of Transport Ottawa, Ontario
Operator	Canadian Coast Guard Quebec District Quebec, Qc

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Description of Vessel

The "NICOLET" is a research vessel mainly used for hydrographic surveying by the Canadian Coast Guard on the St. Lawrence River in the Laurentian region.

Note: All times in this report are expressed in Eastern Daylight Saving Time (UTC minus 4 hours).

Background

On September 19, 1986, as the "NICOLET" was leaving her berth in Quebec City to carry out sounding operations on the St. Lawrence River, a crew member fell overboard.

In spite of all rescue attempts, the victim disappeared below the surface of the water and drowned.

Particulars of Deceased

Name	Jean-Guy Gamache
Position aboard Vessel	Wheelsman
Age	49
Address	Beaupré, Quebec

Narrative

On Friday, September 19, 1986, the Canadian Coast Guard vessel "NICOLET" of the Quebec district planned to carry out sounding operations near Saint-Nicolas, about 12 miles upriver from Quebec City.

The vessel lay overnight at berth 96 at the Queen's Wharf in Quebec City. The time of departure had been set for 0715 and a few of the crew members, including Mr. Gamache who was a wheelsman on the "NICOLET", had spent the night at home.

The latter arrived aboard a few minutes before departure. He told a companion at work that he had a sore throat and that he did not feel particularly well.

Preparations for letting go the lines were carried out. The current was strong and the tide was rising. The vessel

was moored port side to the dock with her bow heading down-river. The master was at the bridge control station on the port side. The officer of the watch was also on the bridge but on the starboard side and the wheelsman was stationed at the wheel.

Two ratings were stationed on the stern for letting go the mooring lines. They were under the supervision of an officer who stood on the boat deck above them from where he could supervise their activities and, at the same time, report to the master the distance between the vessel and the dock. Another seaman was posted on the dock ready to cast off the mooring lines, whilst others were posted forward.

Undocking manoeuvres were normal and, after embarking the seaman who was on the dock, the vessel got under way at 0715 as planned.

After the two men finished coiling the mooring lines on the stern, one of them stayed behind with a small hand held fender to cushion any contact between the vessel and the dock. The other crew member went up to the boat deck, walked past the officer and headed for the rubber fender that was made fast forward of the port lifeboat. When the first seaman saw his companion go to the boat deck, he asked that he wait for him before lifting the fender.

As soon as the stern was clear of the dock, the first seaman went to the boat deck where he saw the second seaman, Mr. Gamache standing on the lower railing of the guard rail and pulling on one of the lines to which the fender was tied. The first seaman shouted to Mr. Gamache to wait.

He saw Mr. Gamache suddenly lose his foothold and become almost horizontally balanced on top of the guard rail. The first seaman leapt towards Mr. Gamache and managed to grasp him by the boot as he fell overboard but, unfortunately, the first seaman was unable to get a firm grip and Mr. Gamache fell head first into the sea.

The first seaman raised the alarm by shouting 'man overboard'. The officer who was still reporting the distance off at the stern, turned around and saw someone falling.

The master was on the port wing and saw Mr. Gamache fall overboard. He immediately advised the officer on the bridge of the fact and ordered the wheelsman to put the rudder hard-a-port. Then, to stop the vessel from swinging, he briefly put the port main engine to 'full astern' and the starboard engine to 'full ahead' and then stopped the main engines. The intention of these manoeuvres was to keep clear of the

'man overboard' and to prevent him from being caught in the propellers.

In the meantime Mr. Gamache had resurfaced. The officer on the bridge threw him a life buoy fitted with a light and blew 3 times on the ship's whistle to alert all personnel on board as well as the other Coast Guard vessels which were moored ahead and astern of the "NICOLET's" berth. Then, using channel 11 on the VHF radio, he informed the Vessel Traffic Services (VTS) Centre in Quebec City of the incident. It was 0716. The officer who was on the boat deck lifted a lifebuoy fitted with a life line, went down to the afterdeck of the vessel and also threw it in the direction of Mr. Gamache. The life buoy landed 4 m from him.

The vessel was now stopped. Mr. Gamache who had fallen less than 30 m from the dock was struggling and slowly advancing towards the dock. He disregarded the life buoys thrown to him, one of which was very close behind him. As he was approaching the dock, the crew encouraged him to continue towards the ladder which, by this time, was not too far away.

Suddenly, he sank below the surface, but then, resurfaced once again. Someone cried out to him saying that there was a lifebuoy 1 m behind him. When Mr. Gamache turned his head towards the vessel, he seemed frightened but did not utter a word and became less and less active. He began to drift towards the "J. E. BERNIER" which was located upstream.

The officer who had thrown the second life buoy had to let go of the end of the life line so that the buoy could follow the victim.

Mr. Gamache disappeared below the surface for a few moments, then resurfaced very briefly when he was about 30 m astern of the "J. E. BERNIER". Only the top of his head could be seen above the surface he then disappeared once again and did not re-appear.

Upon receipt of the 'man overboard' call from the "NICOLET", VTS advised MRCS, Quebec City and CCGS "CG 510", which was berthed close to the vicinity of the incident, was dispatched.

As the tug "LEONARD W" was passing within the area, the "NICOLET" requested that she carry out a search off berth 98. At 0724, the assistance of a helicopter was requested.

Eight vessels, a CCG helicopter and a team of divers from the Quebec police force all participated in the search for the victim.

However, the search was unsuccessful and the body of the victim was not retrieved until October 1, when it was discovered close to the incident area.

Analysis

1. Weather conditions

At the time of the incident, the weather was clear with a visibility of at least 5 miles. The air temperature was 15°C and winds were light from the southwest.

2. Tide and currents

On September 19, 1986, a high tide was predicted for 0815 with a height of 5.3 m above chart datum. Currents of 2.5 to 3.5 knots are usually associated with a flood tide in this area. The Gulf and River St. Lawrence, Sailing Directions, advise that this rate is maintained until about one hour before high water. The accident occurred at 0715, one hour before high water.

3. Water temperature and hypothermia

On the morning of the incident, the water temperature at Queen's Wharf was 14.4°C (58°F). A graph produced from figures based on experimental cooling in sea water predicts the average survival time of an adult in water of different temperatures. (See annex 1)

The graph indicates that an adult may survive up to 2 hours in sea water with a temperature of 14°.4°C. Survival time could be reduced by one-half if there is excessive body movement and conversely, could be doubled if warm clothing is worn.

4. Personal safety equipement

The victim was wearing warm clothing which is supplied by the CCG to its seagoing employees.

At the time of the incident, Mr. Gamache was wearing a safety hat, work gloves and standard safety boots as required by sections 6, 7 and 9 of regional fleet order number 782, issued by the Canadian Coast Guard (Laurentian).

However, when the body was examined, the safety boots worn by the victim were found to be in poor condition with the soles being very slippery.

The department's policy in compliance with the Treasury Board's directive concerning the supply of safety boots to Transport Canada employees is given in the Deputy Minister's circular number 81-04701-052. In brief, an employee is given an allowance for the purchase of safety boots and must himself buy the the boots; then, he must reclaim the payment which had been set at $15.15 by the Treasury Board for the year 1986.

Supervisors and managers must make sure that safety boots worn by employees in their jurisdiction comply with standards at all times.

The victim was not wearing a personal flotation device. Section 12.1 of the above mentioned regional fleet orders describes the type of personal flotation devices. Section 12.2 entitled Risk of Drowning states the following:

> No employee may travel or work nor be authorized to travel or work on the water or in an area of work where there is risk of drowning unless:
>
> a) the employee wears a work vest or other flotation device, or
>
> b) a safety net or a stage (fitted with a 45 in high guard rail) or a safety device which will offer support and prevent the employee from falling into the water is fitted, and
>
> c) the employee is accompanied by at least another person.
>
> All employees working near docks, in barges or in small boats must wear the work vest at all times. (free translation)

Section 11.44 of the Canadian Coast Guard Standing Instructions also states the following:

> 11.44 Canadian Marine Service Crew Vests are to be worn without exception by everybody in a boat at any time from the boat being turned outboard until it is turned in again. These vests are also to be worn by all personnel engaged in buoy work or otherwise exposed to the risk of falling into the water. Crew vests are not a substitute for lifejackets and in all

cases where lifejackets are required they should be worn whether or not crew vests are also being worn.

5. **Work schedule**

There are four quartermasters on board the "NICOLET". Three stand alternate watches at the wheel whilst the other works on deck. This system rotates on a weekly basis thereby giving each quartermaster the opportunity to remain familiar with the handling of the vessel. At the time of the incident, Mr. Gamache was on deck work duty.

6. **Position of vessel at Queen's Wharf and departure manoeuvre**

The "NICOLET" was berthed port side to pier 96, Queen's Wharf with the "J.E. BERNIER" astern of her, starboard side to berth 97 and the "MONTCALM" ahead of her starboard side to berth 95.

The "NICOLET" was bound for Saint-Nicolas, upriver but she was heading downriver on a flood tide. Consequently, once the berth was cleared, the vessel was turned short round to starboard.

Mr. Gamache fell over the port side and as the stern was now swinging to port, there was a strong possibility that he would be caught in the propellers. Realizing the danger, the master took the necessary action to check the stern swing.

7. **Fenders**

Two rubber fenders, each measuring 61 cm x 91 cm and weighing 30 kg had been placed between the dock and the port side of the vessel.

Mr. Gamache was trying to lift one of these fenders inboard when he lost his footing and fell overboard.

A horizontal rubbing strake spans the length of the vessel on each side. It is located just below the main deck level and protrudes about 0.25 m from the hull. The rubber fender, which the victim was trying to bring inboard, hung below the horizontal rubbing strake. It is possible therefore, that Mr. Gamache lost his footing while trying to pull the portable fender over the permanent rubbing strake.

It appears that Mr. Gamache fell into the water without striking any part of the vessel.

8. **Efforts at rescuing the victim**

Within less than a minute of the incident the VTS Centre in Quebec City was advised and they immediately forwarded the information to Search and Rescue.

Rescue vessel "GC 510" left berth 98 at 0718 and was on scene at 0719. The "NICOLET" requested the assistance of the tug "LEONARD W" which was passing by at 0716 and at 0723 a request was made for a helicopter which arrived on scene at 0734. Subsequently, eight vessels participated in the search but without success.

The Quebec City harbour police requested the assistance of divers from the provincial police force at 0745. Two dives were carried out at 0945 and at 1135 but these, too proved unsuccessful.

9. **Lifesaving equipment**

The two life buoys which were used were of an approved type and in good order.

The "GC 510", a Search and Rescue vessel, responded to the call with haste and was on site two minutes after the 'Mayday' call and less than 3 minutes after the incident occurred.

The 'Mayday' call sent on channel 11, VHF radio by the "NICOLET" to the VTS Centre in Quebec City was quickly passed on to the Search and Rescue Centre.

10. **Cause of drowning**

It would appear that Mr. Gamache was not a competent swimmer. Tests were performed in a swimming pool by a medallist swimmer dressed similarly to Mr. Gamache at the time of his fall, which revealed that this swimmer was able to swim the width of the pool but with great difficulty. He observed that as soon as he stopped swimming, he would immediately sink. Accordingly, he estimated that an average swimmer would stay afloat no more than one minute under those conditions.

Mr. Gamache was warmly dressed and wore safety boots. It is possible that initially, his clothes may have helped him to float but as they absorbed water, they hindered him and became a contributing factor to his sinking.

The body was retrieved 12 days later. An external examination of the body by the coroner revealed no markings or bruises but no autopsy was carried out.

Because of medical problems, Mr. Gamache had not been granted permission to work on board Coast Guard vessels which voyaged in the Arctic but these particular medical problems had no bearing on the cause of drowning.

11. Qualifications and experience of personnel

The master of the "NICOLET" had been working on board this vessel since August 18, 1986. He holds a Canadian Coast Guard Master's certificate issued in 1978. He has been a master on CCG vessels since 1980 and had been at sea for 14 years.

The officer of the watch at the time of the accident had been working on board the "NICOLET" for the past 5 years. He holds a Canadian Coast Guard Watchkeeper's certificate issued in 1979 and a Canadian Watchkeeper's certificate issued in 1980. He has been at sea for 10 years.

The officer on duty at the stern at the time of the accident had been working on the "NICOLET" for the past year. He holds a Canadian Watchkeeper's certificate issued in January 1982. He has been working as an officer since 1962 and has been at sea for 34 years.

The seaman detailed to the mooring lines on the stern of the vessel at the time of the accident had been employed by the CCG for 24 years. He has been at sea 36 years.

The victim had been employed by the CCG since December 1975 and held the position of wheelsman onboard the "NICOLET". According to the work schedule onboard this vessel at the time of the accident, it was his turn to work on deck for a week.

Mr. Gamache had attended a level II Marine Emergency Duties course and was issued a certificate to that effect on March 21, 1986.

Findings

On September 19, 1986, while manoeuvring to leave Queen's Wharf in Quebec City, a crew member from the CCG vessel "NICOLET" fell overboard. In spite of all efforts undertaken to rapidly rescue the victim, he disappeared below the surface of the water.

It would appear that the following factors contributed to the incident:

- the victim tried to lift a rubber fender which weighed approximately 30 kg;
- to undertake this, Mr. Gamache climbed on the lower railing of the guard rail;
- the victim wore safety boots which had worn soles; and
- the victim was not wearing any flotation device.

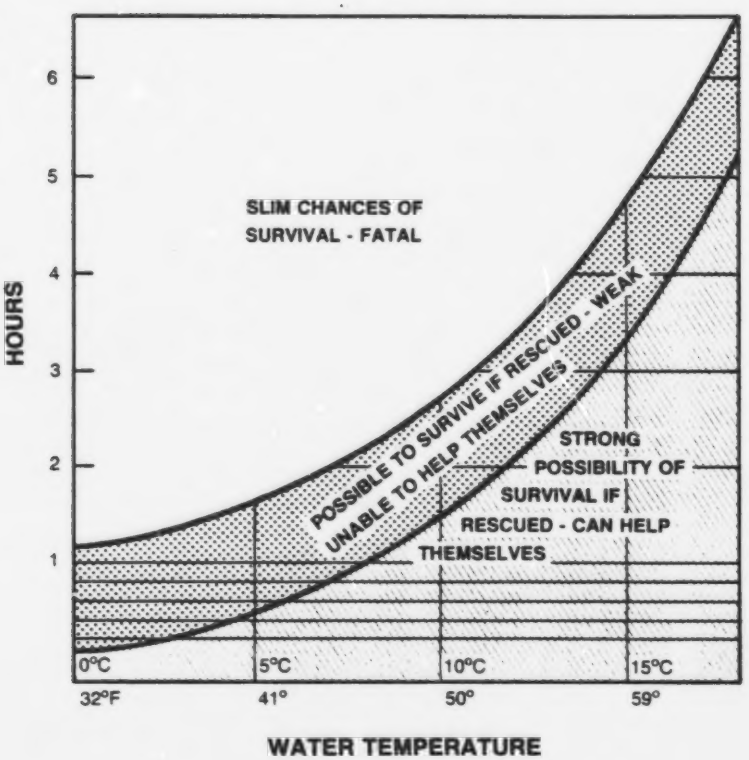
Other findings

Efforts carried out by the crew members of the "NICOLET" to save the victim proved unsuccessful.

The Search and Rescue Centre and all other vessels which were in the area at the time of the incident quickly responded to the 'Mayday' call.

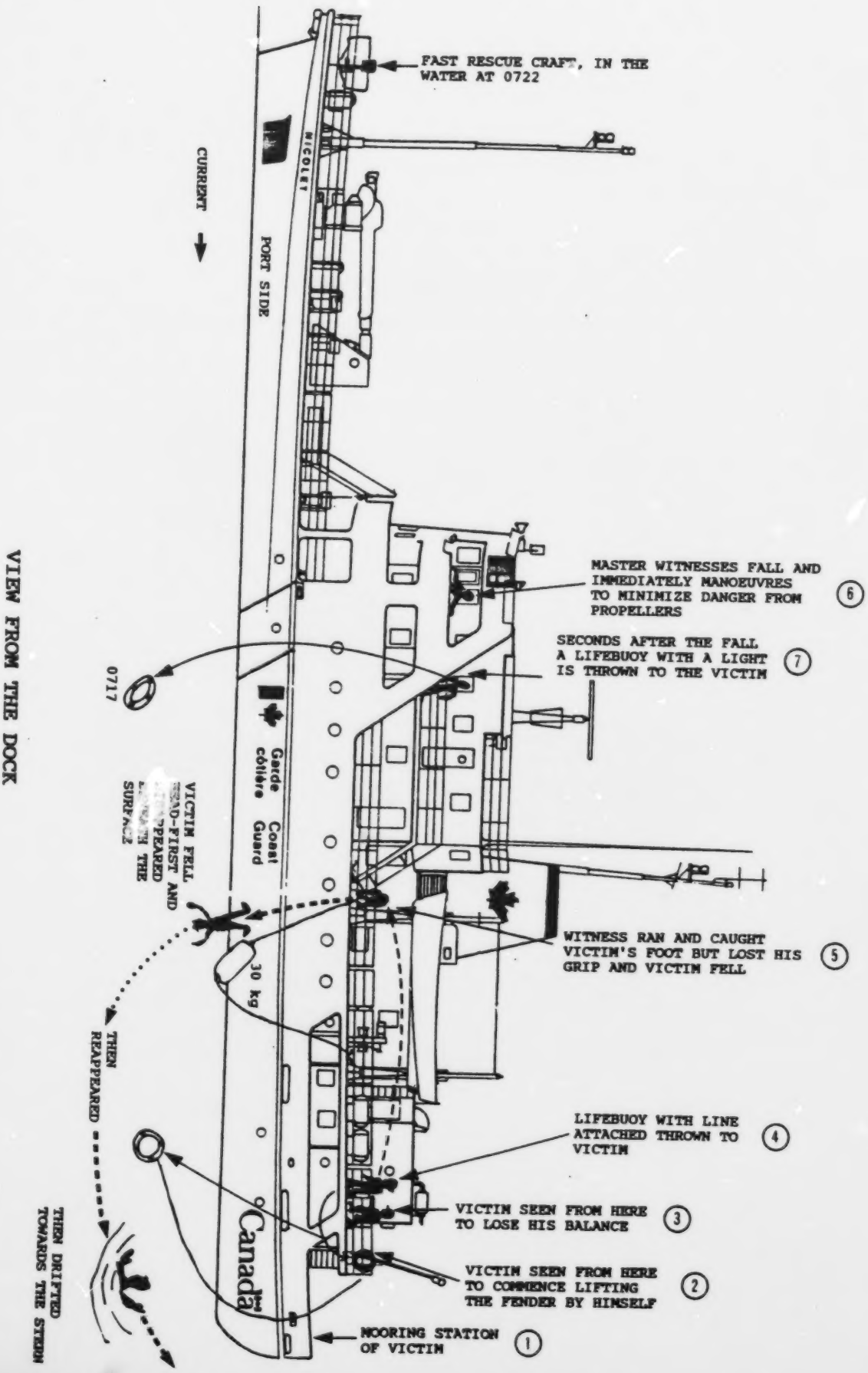
OTTAWA, ONTARIO
APRIL, 1987.

COLD WATER SURVIVAL

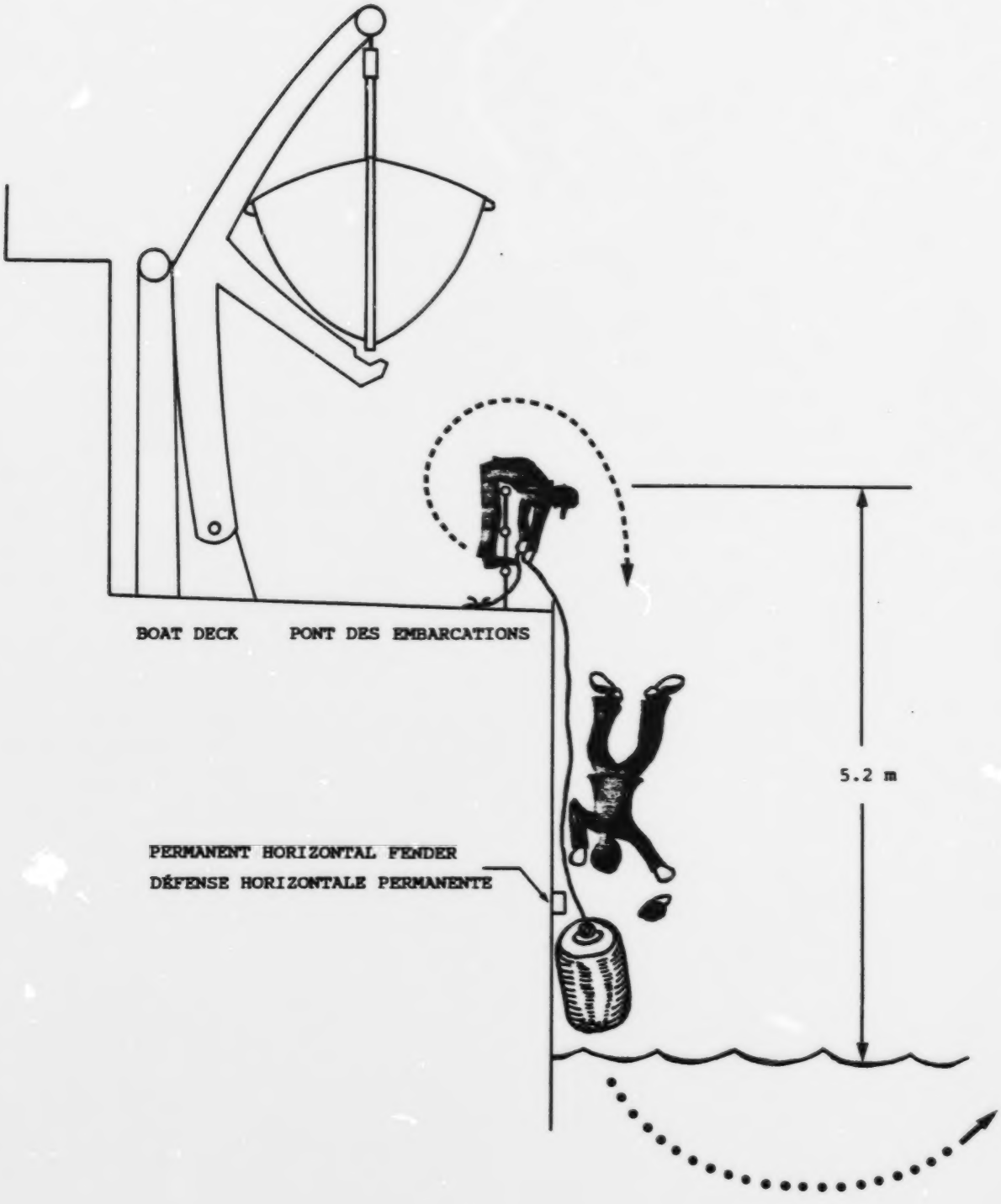


The accompanying graph shows average predicted survival times of average, adult humans in water of different temperatures. The figures are based on experimental cooling of average men and women who were holding still in ocean water and wearing a standard lifejacket and light clothing. The graph shows, for example, that predicted survival time is about 2½-3 hours in water of 10°C (50°F). Predicted survival time is increased by extra body fat and decreased by small body size. Although women generally possess slightly more fat than men they cool slightly faster due to their usually small body size. However, for comparable sizes, the man will cool faster.

"COLD WATER SURVIVAL"
CANADIAN RED CROSS


FAST RESCUE CRAFT, IN THE WATER AT 0722
CURRENT
NICOLET
PORT SIDE
MASTER WITNESSES FALL AND IMMEDIATELY MANOEUVRES TO MINIMIZE DANGER FROM PROPELLERS
6
SECONDS AFTER THE FALL A LIFEBUOY WITH A LIGHT IS THROWN TO THE VICTIM
7
0717
Garde côtière Coast Guard
VICTIM FELL HEAD-FIRST AND DISAPPEARED BENEATH THE SURFACE
WITNESS RAN AND CAUGHT VICTIM'S FOOT BUT LOST HIS GRIP AND VICTIM FELL
5
30 kg
THEN REAPPEARED
LIFEBUOY WITH LINE ATTACHED THROWN TO VICTIM
4
VICTIM SEEN FROM HERE TO LOSE HIS BALANCE
3
VICTIM SEEN FROM HERE TO COMMENCE LIFTING THE FENDER BY HIMSELF
2
MOORING STATION OF VICTIM
1
THEN DRIFTED TOWARDS THE STERN
Canada

VIEW FROM THE DOCK

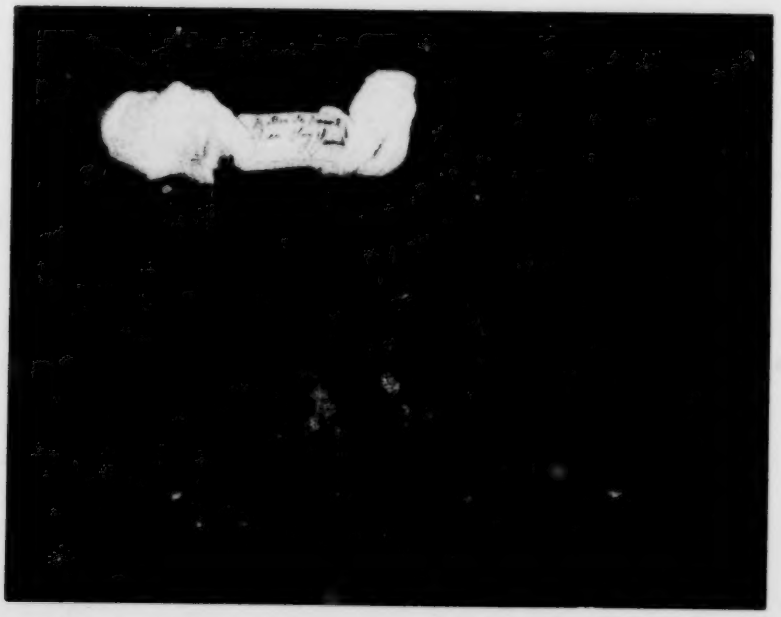


SKETCH OF VICTIM'S FALL OVERBOARD

CROQUIS DE LA CHUTE DE LA VICTIME

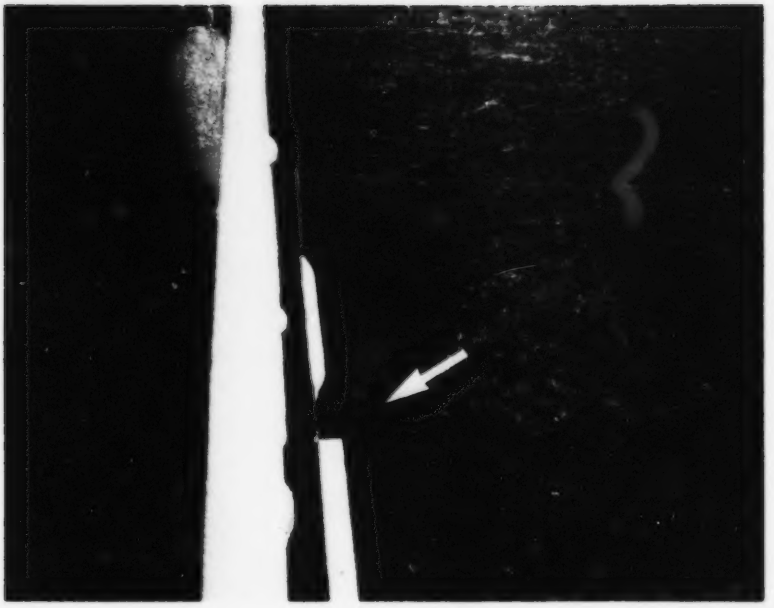
"NICOLET"

Position of victim before his fall overboard.
Position qu'occupait la victime avant sa chute.



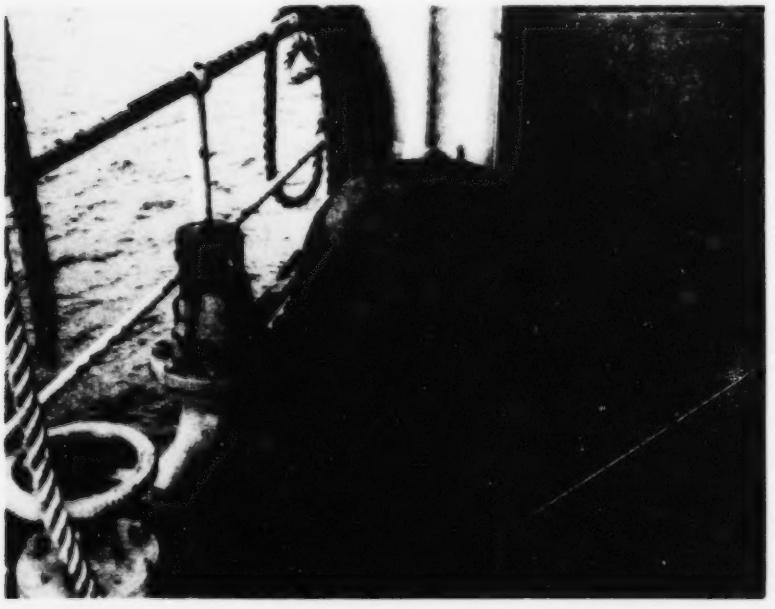
Boots worn by the victim when he fell overboard.

Bottes que portait la victime au moment de sa chute.



Rubber fender which the victim tried to pull up.

La défense en caoutchouc que la victime tenait de ramener.



Rubber fender weighing approximately 30 kg and which the victim tried to pull up.

Défense en caoutchouc pesant une trentaine de kilogrammes identique à celle que la victime tentait de relever.